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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,336	06/30/2003	Upendra V. Chaudhari	YOR20030043US1 (590.105)	3723
35195 7590 03/22/2007 FERENCE & ASSOCIATES 409 BROAD STREET PITTSBURGH, PA 15143			EXAMINER WOZNIAK, JAMES S	
			ART UNIT	PAPER NUMBER
			2626	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/611,336

**Applicant(s)**

CHAUDHARI ET AL.

**Examiner**

James S. Wozniak

**Art Unit**

2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 2 and 9** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. More specifically, claims 2 and 9 recite that an input arrangement is adapted to input linguistic features, which is not disclosed in the specification. Although the specification describes the input of speech features, the specification makes no mention of how an input arrangement may be adapted to input linguistic features or even mentions the use of linguistic features. Thus, Claims 2 and 9 fail to comply with the written description requirement.

***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. **Claims 1-15** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

**Claim 1** is drawn to a processing apparatus that manipulates abstract speech models to produce adjusted abstract speech models. In order for a claimed invention to be considered statutory under 35 U.S.C. 101, it must be useful and accomplish a practical application. That is, it must produce a “useful, concrete and tangible result” (*State Street*, 149 F.3d at \*1373-74, 47 USPQ2d at 1601-02). Since the final result of the claimed invention is an abstract speech model and not a tangible real-world output (for example, displayed text corresponding to a speech utterance), claim 1 is directed to non-statutory subject matter.

Dependent claims 2-7 fail to overcome the 35 U.S.C. 101 rejection directed towards independent claim 1, and thus, these claims are also directed to non-statutory subject matter.

**Claim 15** is drawn to a “program” data structure *per se*, stored on a “machine” readable storage device, as recited in the preamble and as such is non-statutory subject matter. See MPEP § 2106.IV.B.1.a.

Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional

interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory.

Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical “things.” They are neither computer components nor statutory processes, as they are not “acts” being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized to produce a tangible, concrete, and useful result. In independent claim 15, no such result is obtained because there is no claimed tangible output (*for example, displayed text corresponding to a speech utterance*) (*See State Street, 149 F.3d at \*1373-74, 47 USPQ2d at 1601-02- “The claimed invention as a whole must be useful and accomplish a practical application. That is, it must produce a “useful, concrete and tangible result.”*). Thus, claim 15 contains non-statutory subject matter.

Although **claim 8** is directed to a seemingly patentable process, featuring model adaptations steps identical to those recited in claim 15, this claim is directed towards non-functional descriptive material (i.e., data structure description) by virtue of Claim 15. Claim 15 indicates that these steps are part of program instructions. In claim 8, this data structure is not stored on a computer readable medium that enables the data structure's functionality to be realized when executed by a computer to achieve a “useful, concrete, and tangible result” (*see above*). Thus, claim 8 is directed to non-statutory subject matter, for the same reasons as claim 15.

Dependent claims 9-14 fail to overcome the 35 U.S.C. 101 rejection directed towards independent claim 1, and thus, these claims are also directed to non-statutory subject matter.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1-15** are rejected under 35 U.S.C. 102(b) as being anticipated by Rahim (*U.S. Patent: 5,960,397*).

With respect to **Claims 1 and 8**, Rahim discloses:

An input arrangement which input features (*receiving input speech features, Col. 5, Lines 31-42*);

A base model provision arrangement which provides at least one base model (*parallel models- set of recognition training models corresponding to particular environments, Col. 5, Lines 53-67; Col. 6, Line 31- Col. 7, Line 55*);

An environment detector which ascertains an environment from which the at least one base model originated (*classifier that identifies an acoustic environment of a training model, Col. 5, Lines 53-60; Col. 6, Line 31- Col. 7, Line 55*); and

A transform arrangement which produces a target model based on a feature vector corresponding to the environment from which the at least one base model originated (*model*

*transform based on a model from an particular environment, wherein model parameters in a vector space, or vectors, are utilized, Col. 6, Lines 1-14; Col. 8, Lines 11-22; and Col. 8, Line 59- Col. 9, Line 22).*

With respect to **Claims 2 and 9**, Rahim further discloses:

The apparatus is adapted to perform speech recognition (*speech recognition, Col. 6, Lines 15-22*) and said input arrangement is adapted to input linguistic features (*input speech features, Col. 5, Lines 31-42, which correspond to word portions, Col. 1, Lines 16-20*).

With respect to **Claims 3 and 10**, Rahim further discloses:

The base model provision arrangement is adapted to build a pool of base models (*plurality of models corresponding to different acoustic environments, Col. 7, Lines 41-5*).

With respect to **Claims 4 and 11**, Rahim further discloses:

The base models are Gaussian Mixture Models (*GMMs, Col. 6, Lines 41-46*).

With respect to **Claims 5 and 12**, Rahim further discloses:

The environment detector is adapted to express the closeness of a set of at least one input feature to a given base model (*identifying the acoustic environment of unknown speech, Col. 5, Lines 53-60*).

With respect to **Claims 6 and 13**, Rahim further discloses:

The feature vector represents at least one likelihood associated with at least one input feature in a given environment (*likelihood associated with identifying an acoustic environment corresponding to input speech features, Col. 5, Lines 9-21*).

With respect to **Claims 7 and 14**, Rahim further discloses:

The environment detector is adapted to inform the production of the feature vector in correspondence with the environment from which the at least one base model originated *(determining and providing the most similar model to input speech features for model adjustment, Col. 10, Lines 10-38)*.

With respect to **Claim 15**, Rahim discloses the system and method for model adaptation, as applied to claims 1 and 8, as software stored in a ROM *(Col. 4, Lines 38-59)*.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Lee (U.S. Patent: 5,787,230)- discloses a method for adapting speech recognition models to environmental noise.

Takahashi et al (*U.S. Patent: 5,793,891*)- discloses a system that adapts prepared speech models to different environments.

Gong (*U.S. Patents: 6,389,393 and 6,418,411*)- discloses a method for speech recognition model adaptation.

Chaudhari et al (*U.S. Patent: 6,751,590*)- teaches a system for acoustic feature transformation.




8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached at (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak  
3/2/2007

  
PATRICK N. EDOUARD  
SUPERVISORY PATENT EXAMINER